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ABSTRACT

The admissions process at Fayetteville Technical Institute (FTI) currently relies on high school class rank, prior academic performance, and an admissions interview for placement. Faculty concern about students' writing ability prompted a review of the placement test program, which resulted in a recommendation to include a measure of grammatical achievement in the admissions test battery. A study was conducted to examine the feasibility of using the Language Usage section of the Differential Aptitude Tests (DAT) as an admissions screen and placement tool. The test was administered to 79 students enrolled in fall 1985 associate degree freshman English classes. Test scores were compared to final course grades, revealing a statistically significant difference between the test scores of the successful and the unsuccessful students. The study showed that all scores over 45 (of 50 possible) resulted in a course grade of C or better, while 87% of the scores between 35 and 44 resulted in a C or better. Based on study findings, an expectancy table was developed for admissions counselors to use as an additional tool for the placement of students with deficiencies in English grammar and it was recommended that the Language Usage subtest of the DAT be included in FTI's admissions test battery. (Author/EJV)

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THE USE OF THE LANGUAGE USAGE SECTION OF THE DIFFERENTIAL APTITUDE TEST AS A PREDICTOR OF SUCCESS IN FRESHMAN LEVEL ENGLISH COURSES

by

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ABSTRACT

The admissions process at Fayetteville Technical Institute currently relies on high school class rank, prior academic performance, and an admissions interview for placement. Faculty concern that students lack the ability to respond adequately to essay examinations and written requirements prompted a review of the placement test program and resulted in a recommendation to include a measure of grammatical achievement in the admissions test battery. This paper examined the use of the Language Usage section of the Differential Aptitude Tests as an admissions screen and placement tool.

The Language Usage subtest of the DAT was administered to seventy-nine students enrolled in the fall quarter of 1985 associate degree freshman English classes. Test scores were compared to final course grades attained. Application of a t-test revealed a significant difference between the test scores of the successful and the unsuccessful students. The coefficient of correlation was calculated at .65.

Recommendations were made to include the Language Usage subtest of the DAT in the admissions test battery at Fayetteville Technical Institute.

An expectancy table was developed for admissions counselors to use as an additional tool for placement of students with deficiencies in English grammar.

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INTRODUCTION

The open-door community college has attracted students with widely diverse needs and abilities. Entry level assessment of students who enroll in community colleges has become a recognized necessity. Rouche and Snow (1979) reported that some admissions testing is offered in 83 percent of the community colleges which they surveyed and that the trend was toward even greater test use.

Fayetteville Technical Institute administers an admissions test battery to provide advice and to recommend remediation to students who might have academic deficiencies. A recent evaluation of the current admissions test program concluded that a measure of grammatical usage should be included in the test battery. The evaluation recommended the investigation of the Language Usage section of the Differential Aptitude Tests (DAT) as a measure of an applicant's grammatical achievement.

The purpose of this study was to determine if the relationship between the score which a student attained on the Language Usage section of the DAT and the final grade received in an associate degree level freshman English course could be used to improve placement decisions. Three classes were randomly selected and tested at the start of the fall, 1985, term. Final course grades were obtained for all students tested and analyzed using t-ratio and a correlation coefficient was computed.

The findings of this study recommended either the Language Usage section of the DAT be included in the admissions test battery, or a local test of grammatical usage be developed to assist in placement decisions.

BACKGROUND AND SIGNIFICANCE

The admissions procedures at Fayetteville Technical Institute are based upon an open-door policy. Students may gain admission to any curriculum as long as they meet the prerequisites for that program. FTI relies on high school class rank, past academic performance, and an admissions interview with a staff counselor for placement decisions.

An admissions test battery is available for guidance and assessment when indicated. The current test battery does not include a test of grammatical usage. Faculty concerns that students lack the ability to respond to essay-type examinations and written assignments prompted a review of the placement testing program resulting in the recommendation to investigate the possible inclusion of the Language Usage section of the DAT in the test battery.

The Language Usage section of the DAT was selected as a measure of grammatical usage for investigation because of the reported usefulness in predicting academic performance (Linn:1978, and Mastie:1976). The tests have been extensively validated on a secondary school population, but only limited normative data has been collected in post-high school educational institutions. Herman and Huesing (1972),

in one such study, concluded that the DAT was generally suitable for post-high school use. The test publishers provide information on several correlation studies in the Fifth Edition Test Manual for the Differential Aptitude Test Forms S and T; however, they note that local validity studies should be conducted because of the variation in validity coefficients found from school to school. A study conducted at FTI (Fernald:1977) indicated that the DAT may be a reasonable predictor of success in the General Education curriculum. The sections of the DAT in this study did not include the Language Usage subtest. A survey of the literature failed to disclose further investigation of the use of the DAT as an admissions screen; however, studies of the use of standardized tests to predict academic achievement have been reported.

The response to the survey by Rouche and Snow (1979) indicated that four-year colleges rely on the Scholastic Aptitude Test (SAT) for admissions screening and placement, while community colleges more frequently used locally developed tests or the Nelson-Denny Reading Test (NDRT). A study using the SAT to predict freshman grade point average reported by Halpin, and others (1981) indicated a correlation of $r = .42$. Nisbet, Ruble and Schurr (1982) reported a correlation of $r = .43$ for results on SAT and NDRT and freshman grade point average in a similar study. The criterion variable in both of these studies was cumulative grade point average.

This study focused on investigating the use of the Language Usage test to predict achievement in a course in

English grammar. Narrowing the scope of the investigation was expected to result in a higher positive correlation between predictor test scores and the course grade criterion variable than using the more broadly based cumulative GPA.

RESEARCH HYPOTHESIS

The research hypothesis of this study is that there is a significant difference between raw scores attained on the Language Usage test of the DAT of those students who were successful and those who were not successful in first quarter freshman English courses offered to associate degree level students at Fayetteville Technical Institute.

Treatment of the question focused on a single element of the problem: Would the fact that an applicant did or did not attain a given score on the Language Usage section of the DAT indicate the ability to attain a quality point average at or above 2.00 in first quarter freshman, associate degree level English at Fayetteville Technical Institute.

DEFINITION OF TERMS

Language Usage Subtest of the DAT - A portion of the Differential Aptitude Tests intended as a measure of a student's ability to detect errors in grammar, punctuation, and capitalization in formal writing. Reliability for the Language Usage test reported for boys and girls, grade 12, is .91, and split half (Spearman-Brown) at .91. The mean raw score

approximates 34. Standard deviations approximate 11. Mean Standard Error of Measurement is reported at 3.4 (Fifth Edition Manual for DAT, 1974).

Associate Degree Level English Courses - English courses designed to meet the needs of students who are candidates for an Associate Degree in Applied Science.

Success - For the purpose of this study, success was determined by attainment of a final course grade in freshman English of C or better, which is equivalent to at least a 2.00 grade point average.

BASIC ASSUMPTIONS

The variable of prior school record and that of counselor recommendations were assumed to have no influence on the treatment of data in this study. It was assumed that the population distributions were normal and that the population variances were equal. Motivation of the student had to be overlooked due to lack of evaluation instruments.

LIMITATIONS OF THE STUDY

Time and resources available limited this study to the approved students enrolled for the first time in the fall, 1985, term in associate degree level freshman English classes at Fayetteville Technical Institute.

The Language Usage test of the DAT was selected for this study because of its availability and test administration

procedures are well known. While reviews do bear out the value of the DAT in a secondary school climate, a survey of the literature failed to produce any investigations of the Language Usage Subtest of the DAT as an admissions screen in post-high school institutions.

Criticism based on the lack of local norms may be justified in view of the fact that standardized test results of area public secondary school students tend to fall well below established national norms (Fayetteville Observer, September 23, 1985). Additional problems may be noted in the structure of the control group on which the DAT norms are based. The DAT sample included a single minority group (17.8% Black), while the student population of the fall 1985 FTI enrollment averages 28.4% Black, with small numbers of other non-white minority groups.

The variable of instructor grading standards exists; however, the English department at Fayetteville Technical Institute operates with a detailed syllabus and administers departmental standardized tests which would tend to decrease grade bias.

The testing of random classes in associate degree level English classes in session selected from the fall, 1985, class schedule approximates randomization -- thereby in effect providing control over the intervening variables of prior academic record, race, and instructor grades.

An attempt was made to control the variable of student withdrawals by excluding those students who withdrew

from school prior to the end of the quarter. Inclusion of a substantial number of subjects with GPA's of 0.00 would have otherwise affected the treatment of the data.

PROCEDURES FOR COLLECTING DATA

The administration of the Language Usage test was accomplished by random selection of associate degree level English classes from the fall, 1985, class schedule. The Language Usage test of the DAT was administered to seventy-nine students in three classes during the second week of the 1982 fall term by student development staff counselors, using the standard instructions contained in the test booklet.

Results of this test were scored and identified by class section. English department instructors indicated the final course grade for the fifty-seven students who completed the course. The scores attained on the Language Usage test were divided into two groups based on the final course grade. The test scores of students who achieved a final course grade of C (2.00) or better were placed in Group A, and the test scores of students with a final course grade below C were placed in Group B for statistical treatment.

TREATMENT OF THE DATA

The procedures for the treatment of the data in this study were based upon measures of central tendency and variance as measured by t-ratio.

1. A null hypothesis, H_o: $\bar{A} = \bar{B}$ and an alternate H_a: $\bar{A} \neq \bar{B}$ were tested. The design of this study makes the avoidance of a Type II Error desirable; therefore, the .05 level of significance was used to engage in a two-tailed independent t-test of the sample means of test scores of successful and unsuccessful students.

2. The calculated t-ratio was compared with the tabled value at the .05 level of significance, df = 55.

3. A correlation coefficient was computed by converting final course grades to a numerical equivalent where A = 4.0, B = 3.0, C = 2.0, D = 1.0, and F = 0.0.

4. An expectancy table based on Language Usage test scores and final course grades was developed to assist admissions counselors in placement of students who may have academic deficiencies in English grammar.

RESULTS

An analysis of the students enrolled in associate degree level English courses in fall, 1985, term is shown in Table 1.

Table 1. Analysis of Fall Quarter 1985 Associate Degree Level English Course Students

	Total Students	Test Students
Enrolled	234	79
Withdrew	112	22
Completed	122	57

The comparison between the student who enrolled and those who completed the course revealed a fifty-two percent

course completion rate. The completion rate among the students who participated in this study exceeded seventy-two percent.

The calculated t-value of the set of test scores of successful students (Group A) and unsuccessful students (Group B) was computed to be 3.953 (df = 55) at the .05 level of significance, which exceeded the tabled value of 2.000. The null hypothesis was therefore rejected and the alternate hypothesis was accepted. Detailed statistics are found in Table 2.

Table 2. Measures of Central Tendency, Variance, and Correlation of Successful and Unsuccessful Students

	Group A (Successful)	Group B (Unsuccessful)	Total
Number	41.	16.	57.
Sum of Scores	1673.	509.	2182.
Mean Scores	40.8	31.8	38.3
Standard Deviation	8.1	12.0	8.7
Variance	65.6	144.2	75.2
t_o			2.000
$t_{.05,\ df\ 55}$			3.953
coefficient of correlation, r			.646
coefficient of determination, r^2			.417

The mean test score for successful students approximated 41, while the mean score for unsuccessful students approximated 32. The mean score of all students tested approximated 38.

The coefficient of correlation was determined to be r = .646 which indicated a moderate relationship between test scores and course grades.

Although this study was limited to testing of fall, 1985, freshman associate degree level students, inference may be made to other classes where distribution of that group remains proportioned to the fall, 1985, class.

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

The results of this study indicate that the Language Usage subtest of the DAT would be of positive value as an admissions screen at Fayetteville Technical Institute. The statistical values in Table 2 support the research hypothesis that there is a significant difference between the test scores of successful students and those who were not successful.

The Language Usage test score appears to be a reasonable predictor of success in freshman level associate degree English courses at Fayetteville Technical Institute. This conclusion is supported by the correlation coefficient of $r = .646$ which indicates a moderate relationship between test scores and course grades. The fact that this correlation coefficient is higher than those reported in similar studies may be due, in part, to focus of the research question to performance in English courses rather than a broader cumulative GPA, and may also be in part due to the effect of range restriction which results from selecting students already enrolled in associate degree level freshman English. Students who select this program are seeking an Associate Degree in Applied Science, or to transfer credits to a

four-year institution. This may indicate a higher level of verbal aptitude and knowledge of correct grammatical usage than may be found among students enrolled in vocational or general education curricula.

The correlation coefficient expresses the relationship between the test score and course grade criterion variables in a single number; however, the specific meaning of this number may require further interpretation for non-statisticians or to students planning their studies. Expectancy tables are provided in the Fifth Edition Manual for the DAT, to arrange the results of data in a manner which will help explain the test results to students who may benefit from remedial work in English grammar, but may not comprehend the relationship expressed in the correlation coefficient. The task of the admissions counselor may be aided by the use of an expectancy table based on the actual results which students with similar scores have achieved before him.

The results of this study indicated that all scores over forty-five (of fifty possible) resulted in a course grade of C or better, while eighty-seven percent of the scores between thirty-five and forty-four resulted in a C or better. Scores in the range of twenty-five to thirty-four resulted in only a thirty-eight percent likelihood of attaining a grade of C or better. It should be cautioned that the expectancy table provided in Table 3 is only a starting point for further collection of data. Changing student populations and other conditions will require adjustment and development of a revised table.

Table 3. Expectancy Table Showing the Relationship Between Scores on Language Usage Section of the DAT (Form S and T) and Course Grade in Freshman Associate Degree Level English, r = .65.

(N = 57)

# Receiving Each Grade					LU	% Receiving Each Grade *				
N	A	B	C	D/E	Raw Score	A	B	C	D/E	E
15	4	8	2	1	45 & above	27	53	13		
23	1	1	18	3	35-44	4	4	79	13	
16		2	4	10	25-34		13	25	62	
3			1	2	Below 24			33	67	

*NOTES ON TABLE 3:

a. Percentages are based on the total number of cases falling within each raw-score interval. Each row of percentages sums to 100 percent, within limits of rounding error.

b. Use of the expectancy table -- The results of this study indicate that a score of 45 (of 50) on the LU section of the DAT will result in achievement of a C or better in freshman level associate degree English. Eighty-seven percent of the students who attained at least 35 on the LU should receive at least a C. Scores below 35 may indicate Developmental Studies should be considered because there is a good possibility of receiving a course grade below C.

An incidental finding of this study is revealed in Table 1. The analysis of students enrolled and students tested, shown in Table 1, indicated that only fifty-two percent of all students enrolled completed the course, compared to a seventy-two percent completion rate among those students who participated in the testing. Although beyond the scope of this study, this higher rate of persistence may merit further investigation.

Recommendations:

1. The Language Usage subtest of the DAT should be added to the admissions test battery at Fayetteville Technical Institute.

2. A specific cutoff score or an expectancy table similar to that in Table 3 should be established to help explain the test restuls in terms of probability of success to encourage candidates for Associate Degree in Applied Science who have deficiencies in grammatical usage to enroll in Developmental English courses. Other curriculum courses will require separate analysis and development of expectancy tables or cutoff scores.

3. The higher rate of persistance of the students tested may have resulted from increased motivational factors which, if isolated, can be extended to other English courses. Further investigation may be of value.

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